

Scope

1. This method of test is intended to determine the compressive strength of cured epoxy resin systems

Apparatus

2. (a) *Balance* - A Type I or II, Class D balance conforming to AASHTO M 231.

(b) *Beaker* - A 400 ml (minimum) graduated disposable plastic beaker.

(c) *Mixing Tools* - Stainless steel spatulas, 1/2 in. variable speed drill and a 2 1/2 in. paint stirring spindle.

(d) *Thermometer* - A thermometer conforming generally to the requirements for ASTM 1C or 1F thermometers.

(e) *Molds* - Specimen molds for 2 in. cubes conforming to AASHTO T 106.

(f) *Tamper* - A wooden tamper conforming to AASHTO T 106.

(g) *Mixing Container* - A one gallon capacity friction top metal can or equivalent.

(h) *Testing Machine* - A compression testing machine conforming to the requirements of AASHTO T 106.

(i) *Timer* - A clock or watch capable of measuring minutes and seconds.

(j) *Wax* - Paraffin wax.

(k) *Aggregate* - Manufacturer's designated aggregate or graded standard Ottawa sand conforming to AASHTO T 106.

(l) *Straightedge* - A 12 in. wooden or metal straightedge.

Safety Precautions

3. The following precautions should be observed when handling epoxy components and cleaning fluids:

(a) Persons handling these materials should use appropriate protective clothing, including rubber or plastic gloves, and appropriate eye protection such as safety glasses.

(b) If any epoxy or cleaning material should contact the skin, the material should be removed immediately with a dry cloth or paper towel, and the affected area should be washed thoroughly with soap and water.

(c) If any material should come in contact with the eyes, flush immediately with water and contact a

physician.

(d) Adequate ventilation is necessary to prevent excessive inhalation of vapors.

(e) Observe all precautions specified by the manufacturer before handling each material.

Sample Preparation

4. (a) Brush a light coat of melted wax on the inner and outer surfaces of the mold, paying special attention to seam areas.

(b) Using the manufacturer's recommended proportions, place the manufacturer's designated aggregates into the mixing containers. In the event no aggregates are designated, use 3 1/2 parts by volume of graded standard Ottawa sand.

(c) Thoroughly stir the individual epoxy components for at least one minute immediately before testing.

(d) Combine and mix sufficient quantities of components A and B in accordance with the manufacturer's recommendations, such that a minimum sample quantity of 400 ml is obtained. If the manufacturer does not recommend a mixing time, mix the sample at least 3 minutes. Use separate mixing tools when obtaining and mixing the desired quantities of each component to avoid contamination.

(e) Combine the premixed adhesive with the aggregate in the mixing container and mix, using the variable speed drill and the paint stirring spindle for a minimum of three minutes at the manufacturer's recommended mixing speed.

(f) Place a layer of the epoxy mortar about one half the depth of the mold in all of the cube compartments. Tamp the mortar in each of the cube compartments 32 times in about 10 seconds in 4 rounds of eights strokes, distributed uniformly over the surface area. The tamping pressure shall be sufficient to ensure uniform filling of the molds. After tamping the first layer in all of the cube compartments, fill the compartments with the second layer of mortar and tamp as specified for the first layer. Strike off the excess mortar with the straightedge by using a sawing motion over the top of the mold.

(g) Cure the specimens in air at 77 ± 2 °F for a period of 24 hours.

(h) Remove the specimens from the mold.

Procedure

5. (a) Center the cube specimens on the lower testing head of the testing machine.

(b) Apply a compressive load at a rate of approximately 3000 lbf/min.

(c) Record the maximum load indicated by the testing machine, as (L).

Calculations

6. Calculate the compressive strength of each specimen according to the following formula:

$$C = \frac{L}{4}$$

where:

C = compressive strength, psi

L = max. load, lbf

Report

7. Report the average compressive strength of the specimens to the nearest 10 psi.

Normal testing time is two days.